

What is claimed is:

1. A mobile power device to supply alternating current (AC) voltage to an appliance, comprising:

an enclosure having a first chamber and a second chamber, the enclosure having an AC output adapted to power the appliance;

one or more user-replaceable energy storage units adapted to be inserted into the first chamber;

an external power source coupled to the one or more energy storage units and adapted to charge the energy storage units; and

an inverter positioned in the second chamber coupled to the one or more energy storage units and the AC output, the inverter receiving direct current (DC) voltage from the one or more energy storage units and generating AC voltage.

2. The device of claim 1, wherein the first chamber comprises a movable door to insert the energy storage units.

3. The device of claim 1, wherein each energy storage unit comprises a battery.

4. The device of claim 1, wherein each energy storage unit comprises a solid polymer without solvent.

5. The device of claim 1, wherein each energy storage unit comprises a dry-cell or wet-cell battery.

6. The device of claim 1, wherein each energy storage unit comprises a capacitor.

7. The device of claim 1, wherein the external power source comprises a battery charger.

8. The device of claim 1, wherein the external power source comprises a step-down transformer and a capacitor.
9. The device of claim 1, wherein the external power source comprises an AC line, further comprising an AC to DC converter positioned in the second chamber.
10. The device of claim 1, wherein the inverter comprises a pulse-width-modulated (PWM) inverter.
11. The device of claim 10, further comprising a sine-wave filter coupled to the PWM inverter output.
12. The device of claim 1, wherein the enclosure or housing is waterproof.
13. The device of claim 1, further comprising a handle attached to the enclosure.
14. The device of claim 1, further comprising a back-up energy storage device coupled to the inverter to provide temporary power to maintain the AC voltage while one or more of the user-replaceable energy storage units are replaced.
15. A system, comprising:
  - a mobile power device to supply alternating current (AC) voltage to an appliance, the power device having an enclosure having a first chamber and a second chamber, the enclosure having an AC output adapted to power the appliance; one or more user-replaceable energy storage units adapted to be inserted into the first chamber; an external power source coupled to the one or more energy storage units and adapted to charge the energy storage units; and an inverter positioned in the second chamber coupled to the one or more energy storage units and the AC output, the inverter receiving direct current (DC) voltage from the one or more energy storage units and generating AC voltage; and

a back-up energy storage device coupled to the inverter to provide temporary power to maintain the AC voltage while one or more of the user-replaceable energy storage units are replaced.

16. The system of claim 15, wherein the first chamber comprises a movable door to insert the energy storage units.

17. The system of claim 15, wherein each energy storage unit comprises a battery.

18. The system of claim 15, wherein the energy storage unit comprises a capacitor.

19. A method of operating a mobile power device to supply alternating current (AC) voltage to an appliance, comprising:

inserting one or more user-replaceable energy storage units into the mobile power device;

applying an external power source to charge the energy storage units; and

converting direct current (DC) voltage from the one or more energy storage units and generating AC voltage to power the appliance.

20. The device of claim 19, further comprising substituting the energy storage units in the field without interrupting power to the appliance.